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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,359	08/15/2001	Tomaru Ogawa	50195-267	8872

7590 03/23/2004

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EXAMINER	
DOVE, TRACY MAE	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 03/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

DA

Office Action Summary	Application No.	Applicant(s)	
	09/929,359	OGAWA ET AL.	
	Examiner	Art Unit	
	Tracy Dove	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5,7,9,11,13,17 and 19-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,7,9,11,13,17 and 19-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/23/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the communication filed on 3/8/04. Applicant's arguments have been considered, but are not persuasive. Claims 1, 3, 5, 7, 9, 11, 13, 17 and 19-21 are pending.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/8/04 has been entered.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 1/23/04 has been considered by the examiner.

Claim Objections

Claims 11 and 13 are objected to because of the following informalities: the limitation "the M is manganese or a metal of two or more kinds containing manganese as a main component" should be deleted from each claim because the formula does not contain "M". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites "and the x stabilizes within ± 5%", which renders the claims indefinite. It is unclear what the formula of claim 11 encompass if the composition of x is "within ± 5%".

Claim 13 recites "and the y stabilizes within ± 5%", which renders the claims indefinite. It is unclear what the formula of claim 13 encompass if the composition of x is "within ± 5%".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 5, 7, 9, 11, 13 and 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Dahn et al., US 6,168,887 B1.

Dahn teaches a layered lithium manganese oxide material prepared as the cathode material in a lithium battery without rapid transformation to spinel. The layered lithium manganese oxide material has a reversible capacity in the range of 150-210 mAh/g (col. 2, lines 39-47). The lithium battery comprises the layered positive electrode material, a lithium negative electrode and an electrolyte (Example 4). Dahn teaches the layered positive active material is represented by the general formula $Li_x(Mn_{1-y}M_y)O_{2+z}$ wherein M may be a 3d transition metal such as Ni, Co, Fe, Cr or mixtures thereof; $0.5<x<1.3$; $0.0 \leq y<0.4$; and $-0.5<z<0.5$ (col. 3, lines

25-45). Note col. 5, lines 56-67. Dahn teaches it has been shown that heavy chromium doping stabilizes the layered structure of a positive active material (col. 6, lines 50-55). See the Examples regarding claim 19. Dahn discloses $Li_{2/3}MnO_2$ in column 7, lines 41-42 and $Li_{2/3}Mn_{0.82}Co_{0.18}O_2$ in claim 13. Oxide sources are provided in stoichiometric amounts, which means that masses of reactants are selected based on their molar weights so that the correct molar ratios are incorporated to give the desired product. The reagent oxide sources are thoroughly admixed and the admixture is subject to calcinations (baking) in air (oxygen containing) or in argon (not oxygen containing) (col. 6, lines 58-col. 7, lines 14).

Regarding the limitation of a BOP of more than or equal to 0.23, Dahn inherently teaches this limitation because it is a property of the layered lithium manganese oxide material. Since Dahn teaches the same layered lithium manganese compound as discloses in the claimed invention, the compound of Dahn would inherently have the same properties (i.e., BOP value).

Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dahn et al, US 6,168,887.

Dahn teaches a layered lithium manganese oxide material prepared as the cathode material in a lithium battery without rapid transformation to spinel. The layered lithium

manganese oxide material has a reversible capacity in the range of 150-210 mAh/g (col. 2, lines 39-47). The lithium battery comprises the layered positive electrode material, a lithium negative electrode and an electrolyte (Example 4). Dahn teaches the layered positive active material is represented by the general formula $Li_x(Mn_{1-y}M_y)O_{2+z}$ wherein M may be a 3d transition metal such as Ni, Co, Fe, Cr or mixtures thereof; $0.5<x<1.3$; $0.0 \leq y<0.4$; and $-0.5<z<0.5$ (col. 3, lines 25-45). Note col. 5, lines 56-67. Dahn teaches it has been shown that heavy chromium doping stabilizes the layered structure of a positive active material (col. 6, lines 50-55). See the Examples regarding claim 19. Dahn discloses $Li_{2/3}MnO_2$ in column 7, lines 41-42 and $Li_{2/3}Mn_{0.82}Co_{0.18}O_2$ in claim 13.

Regarding the limitation of a BOP of more than or equal to 0.23, Dahn inherently teaches this limitation because it is a property of the layered lithium manganese oxide material. Since Dahn teaches the same layered lithium manganese compound as discloses in the claimed invention, the compound of Dahn would inherently have the same properties (i.e., BOP value).

Dahn does not explicitly teach a specific example wherein M, in the formula $Li_x(Mn_{1-y}M_y)O_{2+z}$, is a combination of two metals.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Dahn teaches a general formula $Li_x(Mn_{1-y}M_y)O_{2+z}$ wherein M may be a 3d transition metals such as Ni, Co, Fe, Cr or mixtures thereof. Thus, Dahn provides motivation to use more than one transition metal for M by the teaching that "mixtures thereof" may be used. Furthermore, Dahn discloses $Li_{2/3}MnO_2$ in column 7, lines 41-42 and $Li_{2/3}Mn_{0.82}Co_{0.18}O_2$ in claim 13. Dahn has a specific teaching that chromium doping of the lithium manganese oxide material stabilizes the layered structure (col. 6, lines 51-55). Thus

one of skill would be motivated to dope the $Li_{2/3}MnO_2$ or $Li_{2/3}Mn_{0.82}Co_{0.18}O_2$ of Dahn with chromium in order to stabilize the layered structure.

Response to Arguments

Applicant's arguments filed 3/8/04 have been fully considered but they are not persuasive.

The 35 U.S.C. 112, 2nd, rejection of claim 17 has been withdrawn.

Applicant argues Dahn fails to disclose the minimum and maximum values of x as recited in each independent claim. However, Dahn does not need to disclose specific examples of the minimum and maximum values of x in order to anticipate the instant claims. Dahn has a specific teaching in the claimed range. Specifically, if $0.2<x<0.4$ (claimed invention), then the lithium quantity is $[(1-0.4)<Li<(1-0.2)]$ or $0.6<Li<0.8$. Dahn discloses $Li_{2/3}MnO_2$ (7:41-42) and $Li_{2/3}Mn_{0.82}Co_{0.18}O_2$ (claim 13). In both examples the lithium manganese oxide active material has a lithium quantity of 0.66 (2/3), which is within the claimed range. The BOP value is a property of the claimed material. Since Dahn discloses the claimed material, Dahn inherently teaches the properties of the material. Applicant refers to Figure 5 to argue that Dahn does not teach or suggest the pending claims, however, Applicant's own Figure 5 shows a lithium quantity of 0.66 (disclosed by Dahn) has a BOP value of 0.23 or greater.

Applicant does not separately argue the 35 U.S.C. 103(a) rejection of claim 17.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tracy Dove
Patent Examiner
Technology Center 1700
Art Unit 1745

March 18, 2004